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COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548



B-146864

September 29, 1978

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The Honorable John C. Stennis
Chairman, Subcommittee on Defense
Committee on Appropriations
United States Senate

Dear Mr. Chairman:

This is in response to the request of your staff to advise you of the results to date of our review of the development of military and civil agency nontactical secure voice systems. This same information is being sent to the Chairman of the Subcommittee on Defense, House Appropriations Committee.

BACKGROUND

Both the Department of Defense (DOD) and North Atlantic Treaty Organization (NATO) are planning and developing military tactical and nontactical secure voice systems. The DOD systems are planned for use in the 1980s and beyond. Also, U.S. Government civil agencies are developing a secure voice system for use during the same time period. Rather than seeking economies and flexibility through use of widely available narrowband oriented commercial and Government telephone networks for the U.S. nontactical military system, DOD has sought "direct" (as opposed to "acceptable") interoperability with wideband tactical systems. Therefore, DOD has applied tactical philosophies, technology, and standards in defining requirements and system planning for its nontactical secure voice system.

The House and Senate Appropriations Committees directed, in their fiscal year 1978 appropriations reports, that a single narrowband nontactical secure voice system be developed as a common-user system, rather than continuing with the development of a wideband defense system and a separate narrowband civil system.

Based on subsequent reevaluations, DOD proposed a hybrid--predominately narrowband for the Continental United States (CCNUS) and predominately wideband for overseas--nontactical system concept at the fiscal year 1979 appropriations hearings.

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LCD-78-129-II
(941156)

In its fiscal year 1979 report, the House Appropriations Committee again directed DOD to change its secure voice program to an all narrowband worldwide concept. The Senate Appropriations Committee accepted DOD's proposed hybrid concept. Thus, this divergence must be resolved by the Joint Conference Committee.

The fiscal year 1978 congressional action cited above was based in part on a draft of GAO's report, "Secure Voice Telephone Systems--How Department of Defense Can Save Millions," (LCD-77-105), which was issued on December 30, 1977. The report concluded that a narrowband approach in lieu of the proposed wideband approach for DOD's nontactical secure voice system would:

- result in savings of about \$300 million to the Government over the system's 20 year life cycle,
- permit use of any existing voice grade domestic and foreign telephone networks with their associated survivability and restoration advantages, and
- provide acceptable interoperability with future wideband tactical systems while achieving direct interoperability with the narrowband civil system and tactical users who are limited to narrowband service.

As stated in the report, GAO is conducting a follow-up study of DOD's reevaluation and redirection of its nontactical secure voice program. The following sections address the points of difference between our position which supports the narrowband concept and the DOD proposed hybrid concept. The areas of difference are:

- System economies.
- Survivability considerations.
- Systems interoperability.
- NATO planning.
- Performance and technology trends.

SYSTEM ECONOMIES

In our December 1977 report, we noted that DOD had not fully assessed the economic benefits of a narrowband AUTOSEVOCOM

II approach. We estimated that DOD's worldwide wideband alternative could cost about \$300 million more over 20 years than an all-narrowband alternative. These estimates were based on DOD's early 1977 comparative cost analysis.

Since that time, DOD has made numerous comparative cost analyses of narrowband, wideband, and hybrid alternatives. In a background information paper for Senate and House Conferees and Staff on AUTOSEVOCOM II, dated August 21, 1978, DOD stated that it had carefully reappraised the AUTOSEVOCOM II program in search of an economical system design that would satisfy military requirements. The paper further states that:

"The DOD shares the Congress' concern about cost and flexibility which were expressed in the HAC reports on the FY 78 and 79 Appropriations Bill. It was for these same reasons that the DOD developed the "hybrid" concept. * * * It will also achieve the major portion of one-time and annual recurring cost savings envisioned by the GAO and HAC staffs for their recommended "narrowband concept."

Also, in a DOD secure voice briefing to the staff members of the House and Senate Appropriations Committees and GAO on September 21, 1978, the DOD representatives stated that the hybrid alternative was recommended, in part, because it provides maximum economy through use of existing analog facilities in CONUS without expensive switch modification.

However, cost projections prepared by the Defense Communications Agency (DCA) do not support DOD's position. For instance, the latest cost analysis (April 1978) for all three system approaches for a 20 year life cycle, is shown below in constant 1978 dollars.

	(\$ in millions)					
	<u>R&D</u>	<u>Investment</u>	<u>O&M</u>	<u>Total</u>	<u>Cost offsets</u> 1/	<u>Net</u>
Narrowband ^{2/}	\$39.1	\$275.1	\$393.6	\$707.8	\$392.5	\$315.3
Wideband	\$28.9	\$265.5	\$701.4	\$995.8	\$618.1	\$377.7
Hybrid	\$40.2	\$343.6	\$694.1	\$1077.9	\$609.2	\$468.7

1/ The cost offsets represent future cost avoidance from replacing certain AUTOVON and AUTOSEVOCOM I facilities.

2/ The narrowband approach is not an all-narrowband alternative. The figures shown include a \$71.2 million wideband overlay for only about 230 command and control users, which is not required in an all narrowband system.

Since that time, changes in the hybrid concept have been made which will increase its life cycle costs. Because DOD's plans have not been finalized, current cost estimates for the hybrid approach were not made available to GAO.

The costs shown above do not include certain economies of an all-narrowband approach, such as a single common-user approach for civil and defense users. Also, the hybrid concept imposes expensive ruggedized tactical facilities and technology on the future overseas and portions of the CONUS Defense Communications System (DCS). The nontactical system is not subject to the "harsh environments of the battlefield" argument which normally increases equipment cost by two or four fold.

Based on our work to date, the \$300 million estimated life cycle economies of an all-narrowband system cited in our December 1977 report are still valid. The economic consequence of DOD's secure voice concept could be further understated if DOD continues to apply tactical system technology to nontactical DCS planning, according to earlier DOD engineering studies. Under that planning concept, it is likely that Defense systems will continue to evolve into self-contained military networks rather than using the flexibility of currently available and less costly commercial facilities.

SURVIVABILITY CONSIDERATIONS

We reported in December 1977 that the wideband nontactical system being developed by DOD as part of the DCS, would be heavily relied upon during wartime and crisis situations for command and control communications. In comparison with that wideband system, we concluded that a narrowband alternative had greater survival and restoral capability in such situations.

However, in support of its new hybrid system concept, DOD stated that by using an architecture that was in concert with the tactical forces, survivability would be enhanced by allowing reconstitution of the DCS with tactical equipment.

DOD also stated that the overseas key distribution center (KDCs) in its proposed hybrid system design provided better overall security, than those in the all-narrowband system design, in the event of an overrun by the enemy.

Thus far, no new evidence has been introduced during our follow-up review to change the conclusion stated in our December 1977 report. Thus, tactical assets can be used to restore narrowband analog service as well as to restore wideband digital service. This capability from a technical viewpoint, is illustrated by DOD's plans to use Joint Tactical Communications Program (TRI-TAC) switches and existing DCS switches for both clear voice and secure voice in the hybrid concept. GAO does not at this time support the use of tactical equipment methodology in the DCS because the differences could result in the military systems becoming self-contained networks with limited emergency access to domestic and foreign commercial networks.

The advantages DOD claims for the hybrid system overseas KDCs (wideband) do not appear valid. The overseas KDCs in that approach would be located at each switching point, some of which are located near potential enemy positions. The narrowband system concept could operate with only one KDC for the entire system (additional KDCs could be added for survivability). These KDCs could be located far from enemy lines, such as in England for the European theater.

Furthermore, the National Security Agency (NSA) has provided the same degree of protection against compromise for both the wideband and narrowband KDCs.

DOD's statements supporting the hybrid approach do not address the overall survivability advantages of the narrowband concept which include ability (1) to communicate under jamming conditions, (2) to use narrowband constrained services for alternative routing and restoral, and (3) to readily use the widely available foreign and domestic telephone services.

SYSTEMS INTEROPERABILITY

As stated in our December 1977 report, acceptable interoperability can be achieved between a narrowband nontactical secure voice system and wideband tactical systems; but DOD specified that the nontactical and tactical systems must have maximum commonality and "direct" interoperability. However, DOD had not adequately supported this stated requirement nor adequately considered the consequences of that approach.

In support of its new hybrid concept, DOD stated that:

--The hybrid concept provides optimum interoperability between nontactical command and control users and TRI-TAC (wideband tactical) users and meets DOD interoperability requirements with the remainder of the Federal government.

--The narrowband concept is basically incompatible with the communications systems of all the forces with which it is to interoperate.

--The hybrid design locates the narrowband/wideband interfaces as far as practical from the scene of battle.

As we reported in December 1977, a worldwide narrowband nontactical system could be interoperable with the wideband tactical secure voice system. DOD's hybrid design clearly demonstrates this point. Both wideband and narrowband users can talk with each other throughout the AUTOSEVOCOM II system. In addition, DOD officials agreed at the September 1978 briefing that continued improvements have been made with the narrowband techniques being considered for narrowband applications.

Recent tests on improved narrowband techniques demonstrate acceptable interoperability with wideband techniques. According to a DOD official responsible for narrowband testing, the quality of voice was rated "very good" when conversations were flowing from narrowband to wideband terminals and rated "good" when conversations flowed in the opposite direction.

The recent tests show that incompatible narrowband and wideband secure voice signals can be converted through an interface device to achieve acceptable interoperability. For instance, test scores on the quality of interoperability between the lowest quality narrowband and lowest quality wideband signal rates were between 87 and 89. The DOD acceptable quality level is 85. Therefore, a narrowband concept would achieve acceptable interoperability with any of the forces with which it is to interoperate.

As reported in 1977, the need for interoperability between AUTOSEVOCOM II and military and civil narrowband systems could be as significant, especially in crisis situations, as between AUTOSEVOCOM II and wideband tactical system, according to command and control planners.

Based on our evaluation to date, the hybrid approach does not appear to improve the interface problem as stated by DOD. The only tactical systems with which AUTOSEVOCOM II is expected to interoperate directly, other than TRI-TAC, are narrowband Navy and Air Force networks. TRI-TAC is a long-distance semi-fixed system which operates behind the lines of battle and interfaces the DCS at switching points which are located away from the scene of battle.

Additionally, the narrowband concept only requires a few overseas interfaces at gateways between the nontactical and tactical systems. In contrast, the hybrid concept requires interfaces at numerous switching points both in CONUS and overseas to allow narrowband nontactical and tactical users to interoperate with wideband nontactical and tactical users.

NATO PLANNING

Compatibility and interoperability will be achieved between tactical networks of the U.S. and NATO countries which have accepted the same wideband voice processing technique and the 16,000 and 32,000 bits per second dual data rates planned for DOD's TRI-TAC system. The U.S. has made initiatives to NATO to achieve similar wideband agreements between their respective nontactical secure voice systems, AUTOSEVOCOM II and the NATO Integrated Communications System (NICS). On the other hand, there were no plans to promote narrowband techniques for the NICS, even though its adoption for both NICS and AUTOSEVOCOM II could provide a common narrowband secure voice technique for U.S. and NATO users.

In the previously mentioned August 1978 congressional background paper on AUTOSEVOCOM II, DOD states that the hybrid secure voice solution would fulfill DOD's NATO standardization agreements, while the DCS all-narrowband system directed by Congress would:

- violate U.S.-NATO interoperability and their standardization agreements on secure voice technique and data rates,
- set back mutual cooperation and standardization efforts and cause a ripple impact on non-communication, command and control systems,

--severely hamper DOD's efforts for new NATO initiatives, and

--reduce DOD's compliance with the Culver-Nunn Amendment to develop and field compatible equipment with NATO allies.

According to our examination of U.S. and NATO agreements on tactical communications systems and information provided by a senior DOD official involved in planning communications matters with NATO, there is no U.S.-NATO agreement for their nontactical communications systems. Therefore, the DOD official maintained that the development of a nontactical narrowband secure voice system that interoperated with the NICS would not violate any U.S.-NATO communications agreements.

In a 1973 policy memorandum on interoperability of secure voice communications in the 1975-1985 timeframe, DOD's stated objective was to change to data rates lower than 16,000 bits per second and possibly alternative voice processing techniques as the state of the art develops. At the earlier mentioned September 1978 briefing, DOD officials stated that this change would have to be resolved with NATO, and that it was not seen as violation of any U.S.-NATO agreement.

A narrowband nontactical DCS secure voice system that interoperates with the NICS appears to comply with the Culver-Nunn Amendment, which requires such systems to be standardized, or at least interoperable.

Given that there is no U.S.-NATO specific agreement concerning nontactical secure voice and that DOD does plan to transition to narrowband bit rates, we believe a narrowband nontactical secure voice system--which is interoperable with the tactical system, more economical, and more survivable--is the logical approach. From the standpoint of relations with NATO, we believe it would enhance relations to urge such an alternative now rather than to implement an interim system which would require substantial changes at a future date.

PERFORMANCE AND TECHNOLOGY TRENDS

Our December 1977 report concluded that the narrowband concept permitted efficient evolution toward the ultimate DOD objective of achieving a common narrowband technique for all defense and civil Federal users. Conversely, large investments and commitments for the wideband technique,

which cannot transition to lower signal rates nor to alternate techniques, could result in the use of incompatible narrowband and wideband systems through the year 2000. This is still true, based on our evaluation of more recent information.

The thrust of DOD's worldwide nontactical and tactical secure voice planning is to use the wideband technique to the maximum practical extent in the near term. Thus, DOD's secure voice planning appears to be inconsistent with its ultimate secure voice architecture goals.

According to DOD, no one concept (wideband or narrowband) can currently satisfy all military requirements because:

- some military users such as the Navy are constrained to narrowband transmission facilities which will not accommodate wideband terminals, and
- narrowband terminals will not be available until the late 1980s that can meet the weight, power, and size constraints of mobile tactical users.

Future technology can solve the narrowband limitations for tactical applications, but not the wideband limitation for using narrowband services.

DOD's recent Worldwide Secure Voice Architecture Requirements study stated that the ultimate single integrated secure voice goal should be achievable in the 1990s. Various defense secure voice and command and control studies indicate that the narrowband technology is the most defensible rationale for such a unified secure voice objective. The Navy has a variable signal rate terminal that has promising potential to achieve the ultimate universal voice processing technique objective. The terminal is based upon advanced narrowband voice processing technology.

Therefore, we believe that the narrowband concept is the most plausible approach in evolving toward DOD's ultimate goal of having a single universal secure voice concept for both nontactical and tactical users. The feasibility of this approach is strengthened by two factors: (1) the recent demonstrations of narrowband quality and performance, and (2) the early availability of operational narrowband facilities.

Already there have been major technological breakthroughs in advanced narrowband voice processing techniques and equipment miniaturization. For instance, the following is a comparison of 1975 and recent performance scores for a narrowband technique operating at 2,400 bits per second.

<u>Operating Environment</u>	<u>1975</u>	<u>Recent data</u>
Office	86	92.6
1% error rate (semi-fixed tactical)	83	88.6
5% error rate (high noise environment)	64	82.4
DOD Objective	85	85

According to a DOD official, recent tests show that the narrowband technique being considered for the narrowband portion of the hybrid system was superior, by any performance criteria, to the wideband terminals being planned for the wideband command and control portion of the hybrid system.

During the past year, DOD, State Department, White House, and congressional users have been using an advanced development model of a narrowband secure voice system operating at 6,400 bits per second. Most of these users have been satisfied with its quality, especially for operating over poor quality telephone networks. The follow-on second generation narrowband equipment greatly reduced in size and scheduled for use in the early 1980s, will operate at a higher signal rate (9,600 bits per second) and will provide even better voice quality.

According to DOD's AUTOSEVOCOM II development and procurement schedules, narrowband equipment will become operational earlier than wideband equipment. Also, due to its (1) compatibility with regular telephone lines and switching networks, (2) improved voice quality, and (3) early availability, the narrowband concept offers an attractive solution to near term requirements and enhances achievement of long term objectives. This approach would allow DOD to take advantage of technological breakthroughs in systems being developed for use in the 1980s and beyond. The wideband technique, on the other hand, is based on 1970 technology and further potential improvements are limited.

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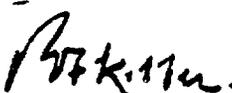
Based on our follow-up review to date, it appears that economic and survivability advantages of a single nontactical narrowband secure voice system for military and civil agency

users still outweigh the advantages associated with having commonality and direct interoperability between tactical and nontactical military wideband systems. It appears that the hybrid alternative is not justified in that it is even more costly than the all-wideband alternative and provides little, if any, improvement in survivability.

Because of the limited time given us to prepare this letter, our comments are quite general and brief. However, we have previously provided your staff with more detailed comments and will provide additional detailed data and comments if you wish. We will, of course, continue with our follow-up review and provide a report thereon as soon as possible after an updated analysis is provided to us by DOD.

As arranged with your office, unless you publicly announce its contents earlier, we plan no further distribution of the report until 30 days after the date of the report. At that time, we will send copies to interested parties and make copies available to others upon request.

Sincerely yours,



ACTING Comptroller General
of the United States

DOCUMENT RESUME

07362 - [C2847968] (Restricted)

[Development of Nontactical Secure Voice Systems]. LCD-78-129-I;
LCD-78-129-II; B-146864. September 29, 1978. 11 pp.

Report to Rep. George H. Mahon, Chairman, House Committee on
Appropriations: Defense Subcommittee; Sen. John C. Stennis,
Chairman, Senate Committee on Appropriations: Defense
Subcommittee; by Robert F. Keller, Acting Comptroller General.

Issue Area: Communications. (3700).

Contact: Logistics and Communications Div.

Budget Function: National Defense: Defense-related Activities
(054); General Science, Space, and Technology:

Telecommunications and Radio Frequency Spectrum Use (258).

Organization Concerned: Department of Defense; General Services
Administration; Office of Management and Budget; National
Telecommunications and Information Administration; Defense
Communications Agency; North Atlantic Treaty Organization.

Congressional Relevance: Rep. George H. Mahon; Sen. John C.
Stennis.

The Department of Defense (DOD) and the North Atlantic Treaty Organization (NATO) are developing military tactical and nontactical secure voice systems; civil agencies are also developing a secure voice system. Rather than planning on the use of widely available narrowband networks for the nontactical system, DOD has sought "direct" (as opposed to "acceptable") interoperability with wideband tactical systems. After the Appropriations Committee directed development of a common-user system, DOD proposed a hybrid nontactical system concept. The Senate Committee accepted this concept, but the House Committee again directed DOD to use an all-narrowband worldwide concept. GAO supports the narrowband concept. Areas of difference with DOD are in system economies, survivability considerations, systems interoperability, NATO planning, and performance and technology trends. GAO believes that the economic and survivability advantages of a single nontactical narrowband secure voice system for military and civil agency users outweighs the advantages associated with having commonality and direct interoperability between tactical and nontactical military wideband systems. The hybrid alternative is not justified since it is more costly than the all-wideband alternative and provides little improvement in survivability. (Author/HTW)



COMPTROLLER GENERAL OF THE UNITED STATES
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Additionally, the narrowband concept only requires a few overseas interfaces at gateways between the nontactical and tactical systems. In contrast, the hybrid concept requires interfaces at numerous switching points both in CONUS and overseas to allow narrowband nontactical and tactical users to interoperate with wideband nontactical and tactical users.

NATO PLANNING

Compatibility and interoperability will be achieved between tactical networks of the U.S. and NATO countries which have accepted the same wideband voice processing technique and the 16,000 and 32,000 bits per second dual data rates planned for DOD's TRI-TAC system. The U.S. has made initiatives to NATO to achieve similar wideband agreements between their respective nontactical secure voice systems, AUTOSEVOCOM II and the NATO Integrated Communications System (NICS). On the other hand, there were no plans to promote narrowband techniques for the NICS, even though its adoption for both NICS and AUTOSEVOCOM II could provide a common narrowband secure voice technique for U.S. and NATO users.

In the previously mentioned August 1978 congressional background paper on AUTOSEVOCOM II, DOD states that the hybrid secure voice solution would fulfill DOD's NATO standardization agreements, while the DCS all-narrowband system directed by Congress would:

- violate U.S.-NATO interoperability and their standardization agreements on secure voice technique and data rates,
- set back mutual cooperation and standardization efforts and cause a ripple impact on non-communication, command and control systems,

--severely hamper DOD's efforts for new NATO initiatives, and

--reduce DOD's compliance with the Culver-Nunn Amendment to develop and field compatible equipment with NATO allies.

According to our examination of U.S. and NATO agreements on tactical communications systems and information provided by a senior DOD official involved in planning communications matters with NATO, there is no U.S.-NATO agreement for their nontactical communications systems. Therefore, the DOD official maintained that the development of a nontactical narrowband secure voice system that interoperated with the NICS would not violate any U.S.-NATO communications agreements.

In a 1973 policy memorandum on interoperability of secure voice communications in the 1975-1985 timeframe, DOD's stated objective was to change to data rates lower than 16,000 bits per second and possibly alternative voice processing techniques as the state of the art develops. At the earlier mentioned September 1978 briefing, DOD officials stated that this change would have to be resolved with NATO, and that it was not seen as violation of any U.S.-NATO agreement.

A narrowband nontactical DCS secure voice system that interoperates with the NICS appears to comply with the Culver-Nunn Amendment, which requires such systems to be standardized, or at least interoperable

Given that there is no U.S.-NATO specific agreement concerning nontactical secure voice and that DOD does plan to transition to narrowband bit rates, we believe a narrowband nontactical secure voice system--which is interoperable with the tactical system, more economical, and more survivable--is the logical approach. From the standpoint of relations with NATO, we believe it would enhance relations to urge such an alternative now rather than to implement an interim system which would require substantial changes at a future date.

PERFORMANCE AND TECHNOLOGY TRENDS

Our December 1977 report concluded that the narrowband concept permitted efficient evolution toward the ultimate DOD objective of achieving a common narrowband technique for all defense and civil Federal users. Conversely, large investments and commitments for the wideband technique,

which cannot transition to lower signal rates nor to alternate techniques, could result in the use of incompatible narrowband and wideband systems through the year 2000. This is still true, based on our evaluation of more recent information.

The thrust of DOD's worldwide nontactical and tactical secure voice planning is to use the wideband technique to the maximum practical extent in the near term. Thus, DOD's secure voice planning appears to be inconsistent with its ultimate secure voice architecture goals.

According to DOD, no one concept (wideband or narrowband) can currently satisfy all military requirements because:

- some military users such as the Navy are constrained to narrowband transmission facilities which will not accommodate wideband terminals, and
- narrowband terminals will not be available until the late 1980s that can meet the weight, power, and size constraints of mobil tactical users.

Future technology can solve the narrowband limitations for tactical applications, but not the wideband limitation for using narrowband services.

DOD's recent Worldwide Secure Voice Architecture Requirements study stated that the ultimate single integrated secure voice goal should be achievable in the 1990s. Various defense secure voice and command and control studies indicate that the narrowband technology is the most defensible rationale for such a unified secure voice objective. The Navy has a variable signal rate terminal that has promising potential to achieve the ultimate universal voice processing technique objective. The terminal is based upon advanced narrowband voice processing technology.

Therefore, we believe that the narrowband concept is the most plausible approach in evolving toward DOD's ultimate goal of having a single universal secure voice concept for both nontactical and tactical users. The feasibility of this approach is strengthened by two factors: (1) the recent demonstrations of narrowband quality and performance, and (2) the early availability of operational narrowband facilities.

Already there have been major technological breakthroughs in advanced narrowband voice processing techniques and equipment miniaturization. For instance, the following is a comparison of 1975 and recent performance scores for a narrowband technique operating at 2,400 bits per second.

<u>Operating Environment</u>	<u>1975</u>	<u>Recent data</u>
Office	86	92.6
1% error rate (semi-fixed tactical)	83	88.6
5% error rate (high noise environment)	64	82.4
DOD Objective	85	85

According to a DOD official, recent tests show that the narrowband technique being considered for the narrowband portion of the hybrid system was superior, by any performance criteria, to the wideband terminal being planned for the wideband command and control portion of the hybrid system.

During the past year, DOD, State Department, White House, and congressional users have been using an advanced development model of a narrowband secure voice system operating at 6,400 bits per second. Most of these users have been satisfied with its quality, especially for operating over poor quality telephone networks. The follow-on second generation narrowband equipment greatly reduced in size and scheduled for use in the early 1980s, will operate at a higher signal rate (9,600 bits per second) and will provide even better voice quality.

According to DOD's AUTOSEVOCOM II development and procurement schedules, narrowband equipment will become operational earlier than wideband equipment. Also, due to its (1) compatibility with regular telephone lines and switching networks, (2) improved voice quality, and (3) early availability, the narrowband concept offers an attractive solution to near term requirements and enhances achievement of long term objectives. This approach would allow DOD to take advantage of technological breakthroughs in systems being developed for use in the 1980s and beyond. The wideband technique, on the other hand, is based on 1970 technology and further potential improvements are limited.

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Based on our follow-up review to date, it appears that economic and survivability advantages of a single nontactical narrowband secure voice system for military and civil agency

users still outweigh the advantages associated with having commonality and direct interoperability between tactical and nontactical military wideband systems. It appears that the hybrid alternative is not justified in that it is even more costly than the all-wideband alternative and provides little, if any, improvement in survivability.

Because of the limited time given us to prepare this letter, our comments are quite general and brief. However, we have previously provided your staff with more detailed comments and will provide additional detailed data and comments if you wish. We will, of course, continue with our follow-up review and provide a report thereon as soon as possible after an updated analysis is provided to us by DOD.

As arranged with your office, unless you publicly announce its contents earlier, we plan no further distribution of the report until 30 days after the date of the report. At that time, we will send copies to interested parties and make copies available to others upon request.

Sincerely yours,


ACTING Comptroller General
of the United States